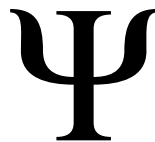




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Mindfulness-based cognitive therapy for depression, does it work and how?

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Abstract

Mindfulness-based cognitive therapy (MBCT) is a mindfulness based treatment modality for depression. It is based upon and has similarities to a Mindfulness-based stress reduction (MBSR) program developed by Kabat Zinn (1979). It has been, in recent, years investigated in relation to its potential to prevent and help depression symptoms. This thesis presents already published studies that have investigated the effectiveness of MBCT in the context of depression prevention. Inclusion criteria are specified and the main studies that are discussed in this paper are those who have some form for controlled group in their design. The studies are discussed in relation to methodological concerns. Current available evidence suggests that MBCT is indeed effective in reducing the risk of relapse, especially for individuals who have experienced at least 3 previous depressive episodes. Theory and research are also presented in order to illuminate the possible mechanisms that mindfulness-training might reduce relapse by.

Abstrakt

Mindfulness-based cognitive therapy (MBCT) er en mindfulness basert behandlingsform for depresjon. Den bygger på og har felles trekk med Mindfulness-based stress reduction (MBSR); et program utviklet av Kabat Zinn (1979). Det har blitt gjort noen studier de siste årene som har testet effekten MBCT har i forhold til tilbakefallsreduksjon. Denne oppgaven presenterer allerede publiserte studier som har testet for dette. Inklusjonskriterier er spesifisert og de studiene som er med i denne oppgaven er de som hadde noen form for kontrollgruppe som en del av studiens design. Metodiske aspekter av disse studiene er diskutert. Studiene viser at MBCT er et effektivt middel som reduserer tilbakefall, spesielt for personer med 3 eller flere episoder av depresjon. Teori og empiri er også presentert for å kunne gi svar på antatte mekanismer for MBCT sin effekt i forhold til depresjonsforebygging.

Introduction

Teasdale et al (2000) has developed a treatment modality based on mindfulness for treating depression, called Mindfulness Based Cognitive Therapy (MBCT). In this thesis, I wish to answer two main questions about Mindfulness Based Cognitive therapy as a treatment modality for depression:

Question I: Does Mindfulness Based cognitive therapy work, to prevent relapse of depression

Question II: What are the mechanisms, - how might Mindfulness Cognitive therapies help to prevent relapse to depression

With regard to the first question – does MBCT work - a review of the research literature suggested that there are some empirical studies relevant for this question. I discuss this question on the basis of available research in the first part of this thesis.

With regard to the second question, how does MBCT work, a review of the literature showed that this question has not yet been studied empirically. For this reason, I discuss the second question on the following theoretical and empirical grounds: Theories of how depression develops and is maintained, suggestions of how cognitive therapies in general work in treating depression and suggestions of how mindfulness therapies work.

Before I go on to discuss the two main questions of this thesis, I present some known characteristics of depression. Aetiological causes for depression are also presented. All of these are relevant for the main discussion part in this thesis.

0.1. Some characteristics of depression

0.1.1 Prevalence rates

Unipolar depression is the most common form of mental disorders (Kessler 1994). The prevalence rates vary across studies. Some estimate that approximately one in five adults (17.7%) are going to suffer from a major depression in their life time (L. L. Judd & Kunovac, 1997). The prevalence rates vary across age groups and the sexes. Data derived from The Epidemiological Catchment Area and National Comorbidity in the USA shows that the 12-month prevalence for Major Depressive Disorder was about 5.3% (3.6% for men and 6.9% for women), and the lifetime prevalence was 13.3% (9.0% for men and 17.1% for women). Prevalence rates were higher for younger subjects, aged 18-29 years and lowest for subjects aged 65 years or more. The rates were higher for those who were divorced, widowed and separated, and for subjects who had never married. Prevalence decreased with higher income and no relationship was found with educational level or urbanization. Mean age at onset was 30.4 years, the median duration of the longest depressive episode was 24 weeks, and responders reported a mean of 4.7 depressive episodes. This data shows recurrent patterns in such studies with women being at higher risk of developing depression and younger adults as more likely to do so as well than older adults (Kessing, 2007). Epidemiological studies since the 1970s show that depression rates are increasing in industrialized countries and the age of onset has moved from the 50-60s range to late twenties (Klerman & Weissman, 1989).

0 1.2 Clinical picture of depression:

Depression can vary in terms of the seriousness of the symptoms from mild short lived depressive episodes to prolonged major depressions. The spectrum of depression disorders and dysthymia's symptoms have a significantly greater negative impact on daily functioning

of the affected individual than hypertension, diabetes, lung diseases or arthritis (Wells et al., 1989).

Current diagnostic systems distinguish between short-term emotional upset and a major depressive episode. Usually a period of at least two weeks is required for the establishment of a major depressive episode. A diagnosis of major depressive episode is not given if the reactions are due to bereavement, a medical condition, or a reaction to a medical or a drug abuse (Bellack & Hersen, 2000). At the core of the clinical picture in depression disorders is a change in mood, affect and the general level of activity. The disturbance may include changes in sleep patterns, irritability, apathy, anxiety and self-reported feelings of sadness. The DSM-IV system distinguishes between three types of unipolar forms of primary mood disorders: major depressive disorder (MDD), dysthymic disorder, and depression not otherwise specified. As mentioned, a duration of at least 2 weeks is required for the establishment of the MDD. Usually the episode might last for many months. Sadness or a significant loss of interest and pleasure are required along with at least four associated symptoms to establish the diagnosis. The diagnosis allows for several degrees of seriousness (mild, moderate or severe) based on the number of symptoms, their degree, and their impact on daily functioning. Severe episodes can be classified as with or without psychotic symptoms.

The ICD-10 system allows for the distinction between bipolar disorder, episodic unipolar and recurrent depressive disorder. According to this system low mood, increased fatigue and loss of interest and pleasure are the 3 main features of a depressed episode. Additional criteria include: reduced concentration ability, self-image and self-confidence issues, guilt feelings, pessimistic thoughts about the future, plans of committing self-injury or suicide, sleep disturbances and reduced appetite. The presence of some or all of the main and secondary symptoms and their seriousness establishes whether the episode is mild, moderate

or severe. The coding of the recurrent depressive episode specifies the degree of severity of the current episode. The systems allow the specification of accompanying psychotic symptoms, or the diagnoses of dysthymia or cyclothymia.

In the diagnostic systems, as pointed out earlier, and also in research literature a distinction is made between unipolar and bipolar depressions. This distinction has its origins in the 1950s and 1960s by the work of Leonhard and Perris. Karl Leonhard conducted family studies and observed that the relatives of individuals with a history of both depression and mania had greater risk of mood disorder than the relatives of individuals with a history of depression only. He introduced the terms “unipolar” and “bipolar”. Later work by Perris (Perris, 1966) with family, twin and adoption studies supported the distinction and made him suggest that the two disorders had different genetic markers.

Researchers working in the field of depression and its treatment suggest additional dichotomies that go beyond the ones suggested by most diagnostic systems. The endogenous/reactive distinction is one. Endogenous depression refers to depression that is not caused by environmental stress; they are assumed to be biologically caused, are reactive to biological treatments, and have their own symptomatology. Neurotic depressions on the other hand are assumed to be caused by stressful life events. Factor analytic studies indicate that endogenous depression is characterized by terminal sleep disturbance, psychomotor retardation, distinct quality of mood, weight loss, concentration difficulty, and inability to respond to affectively pleasant changes in the environment. On most occasions people point to situations that can be thought of as having a causal effect on their depressions and sometimes patients go into long period of depression after some singular painful life event (Grove & Andreasen, 1992). The distinction between endogenous depression and neurotic depression has been debated. Some earlier studies indicate that there's ground for this

distinction but family studies don't support the expectation that endogenous depression would be more familial than non-endogenous depression (Andreasen et al., 1986).

Another distinction is that of primary and secondary depressions. When depression is the main illness it's referred to as primary. However, if it occurs in the context of a somatic illness, then it's called secondary. This distinction has been made to help to distinguish when selecting patients for empirical studies. Another term that may be encountered in depression literature is reactive, which is the same as neurotic. Psychotic depression was used early on to describe endogenous depressions and more recently to refer to depressions with clear psychotic symptoms such as hallucinations and delusions.

01.3 Comorbidity:

When studying depression and making efforts for treatment, it's very important to keep in mind that it's often a comorbid disorder that occurs with other psychiatric conditions. In one study as mentioned (but not specified) in Kessing (2007) comorbidity rates with psychiatric disorders were high. 38% suffered from any type of personality disorder, 36% from any anxiety disorder and 14% from any alcohol use disorder during the preceding 12 months. Another study has found that for people with diagnosis of dysthymia: over 66% of patients had at least one additional diagnosis. Most common disorders for this group were anxiety disorder 47.6%; social phobia 27% and generalized anxiety disorder 22.2%. For major depression the figures were: anxiety disorder 41.6%; social phobia 15.2%, and generalized anxiety disorder 20.3%. The results of this study indicate that the depressive disorder began first in most cases (Sanderson et al., 1990). With regards to the question of how anxiety disorders are related to depressive disorders, two positions exist: unitary model and a dualist view. Unitary model supporters suggest that depression and anxiety are variants of the same disorder. They also suggest that anxiety disorder might develop into depression and be causal

of it. An agoraphobic or a person with social anxiety might restrict their life in such a way that depression might be inevitable. Others suggest that the two disorders are distinct. For more information about the two positions and a review of supporting evidence see Judd & Burrows (1992).

0 1.4 Genetics:

Genetic and family studies suggest that there is a genetic contribution for the development of depression. This is clearly evident in the case of bipolar disorder. But also when it comes to unipolar depressions, there is some indication that genetics may play a role. Relatives of depressive probands show greater risk for developing depression than relatives of controls: 20% compared to 7%, refer to Gershon et al. as cited in (Nurnberger Jr & Gershon, 1992) for more information. Genetic influence can also be seen when looking at results of twin studies. Concordance rates in monozygotic (MZ) twins is greater than that of dizygotic (DZ) twins (Bellack & Hersen, 2000). Some suggest that as one moves from severe cases of depression to the moderate forms, and finally to the milder, neurotic forms, genetic contribution diminishes, and familial and non-shared (unique) influences increase in their contribution (McGuffin & Katz, 1989). Genetic studies that target finding the biological correlates of depression have found markers in several genes for depression. No single gene factor has been established, but rather it seems like several markers in several genes combine together to produce vulnerability. Studies show also grounds for the distinction between unipolar and bipolar depression (Souery et al., 1997), that's to say that the two disorders might have different genetic and biological grounds.

0.1.5 Life events as precursors to depression:

Depression as a disorder occurs in the context of the situation an individual is placed at. Since the 1960s much research has focused on the role life events have in psychiatric disorders. Taken together research shows clearly that major life events have an impact and can start a depressive disorder or perpetuate it (Paykel & Cooper, 1992). Life events play a role but there are modifying and other causative variables, perhaps associated with personality or coping styles. It's thought that life events and stress interact or are additive to other predisposing factors to depression. Examples of life events that may play a role are development of a medical illness, disturbance in interpersonal relationships or losing a job. According to the authors these events (that precede a depression) are usually of an abrupt nature, external and verifiable (i.e. involving external happenings and thus can be validated for the psychologist/researcher). Different classes of events might influence people differently, depending perhaps on individual differences in goals. Some people as suggested by Beck's Sociotropy-Autonomy distinction might be more susceptible to interpersonal issues than goal attainment issues (Beck et al., 1983). Different types of events may thus provoke different psychiatric problems in different people. Cui and Valliant (1997) maintain that depressed people bring about more unfortunate life events upon themselves than persons not prone to depression. In the same manner that negative life events relate to depression, positive ones are related to recovery from depression. For women with chronic depression, life events that promise hope for the future termed "fresh start events" were associated with recovery or improvement (G. W. Brown, 1993).

Despite the evidence that depressed people report higher rates of causative life events, not all people in face of stressful life events go into developing depression. There're differences in the ways and strategies people use to cope with those events. Some strategies are maladaptive and usually would lead to depression. This is discussed later in the text.

Life's events that are thought to contribute to or prevent depression are not restricted to events that occur right prior to the depressive episode, but include also events that occurred as the child grew up. Discussing this would inevitably touch theories of depression that place the cause of depression in adulthood in childhood experiences, self development, attachment to parent and psychodynamic processes. The scope of this thesis does not allow the discussion of all these theories but some thoughts reoccurring in literature concerning early life events and depression will be mentioned.

One of the factors that have been studied long is parental loss. Loss can be factual with the death of parent or it can be due to separation of the parents. Careful review of the many studies done over the years shows that parental death and depression are not related. This means that having one parent dying before a child is, say, 11 won't increase depression risk for that child. For a review of such studies see Parker (1992). When it comes to loss that takes the form of separation the effects on depression can be established. Here the nature of the environment in which the child grew up at, becomes more important. Tense relationship between the parent followed by a permanent separation of the child from either parent are associated with higher risk of depression later in life (Parker, 1992). Researchers in this area warn against taking this link as causative, however. Confounding variables such as parent psychopathology (and links to genetics and biology) and poor parental style prior to the actual separation might be influential and be responsible for the observable association (Tennant, 1988).

As indicated in the last point, the behavior / interaction style of the parent might put the child at a higher risk for later depression. Two main concepts are central when it comes to parental style and late depression in children. Researchers have proposed that care expressed by the parent to the child, and parental control of the child are the most important factors or dimensions (as statistically deduced) (Parker, 1992). Parents can range from being caring,

warm and available to being indifferent or rejecting. They also might allow exploration, freedom and autonomy for the child or they might be overprotective and controlling. These styles are associated with depression and the different aspects of it. Lack of care can lead to problems with developing a stable and realistically positive self-esteem and over-protectiveness might deprive the child of education in self-reliance and problem solving behaviors. This later one might lead to a sense of helplessness and hopelessness in face of stressors (Perris, 1988). Perris also maintains that dysfunctional parental attitudes bring about dysfunctional self-schema in the child and systematic cognitive distortions which make the child more sensitive to life stressors.

Noteworthy is the fact that these observations need not mean causality. Genetic factors might cause the specific unfortunate parenting style of the parent but also contribute by their own to the development of depression in the child. Moreover, how the child interacts with its parents (due to partially genetic factors) might sometimes elicit deviant or unsatisfactory parenting (Parker, 1992).

The data supporting the claim that early parental styles have effect on later depression comes from retrospective studies. Depressed people are asked to rate their parents. Bias can occur in recollecting such data. Personality of the depressive person might be blameful and thus he/she would rate the parent as less affectionate and more controlling, or it might be that the mood of the depressed person causes him or her to rate his or her parents negatively (tending to remember controlling and neglecting childhood experiences).

To sum up, the frequency of depression is high and causes much concern. We also know that relapse rates are high (Gilbert, 1992). In the following, I will discuss the first question of this thesis: Does the treatment of Mindfulness Based Cognitive Therapy help to prevent relapse to depression?

1. Question 1: Does Mindfulness-based cognitive therapy work?

In order to answer this question, we need to review the available research at the moment. In order to evaluate this research, we need criteria for validation of treatment interventions.

1.1 Does Mindfulness-based cognitive therapy work?

1.1.1 Scientific validation of treatment interventions:

Psychotherapeutic interventions can and should be subjected to scientific investigation so their relative effectiveness can be established. In addition to that, their application to a wide range of patient populations should be researched. Studies on the effectiveness of therapeutic measures vary in their nature. Some are explorative and take the form of pilot studies. These types of studies involve usually small number of participants and they are used to know more about new therapeutic interventions. As knowledge accumulates more precise and secure investigations are needed. Studies that illuminate the effectiveness of an intervention are needed. These take usually a form of quantitative studies and take into use statistical techniques to measure effectiveness. Yet, some other studies aim at knowing more about participants' experiences of the therapeutic measure and the actual applicability of the intervention. These may take a form of qualitative studies that provide a different type of information (commonly more "dense" and richer) than the quantitative ones.

All types of studies are valuable at different stages of the development of an intervention and in different contexts. For answering the question of whether MBCT works, I have included studies on the basis that they have included some type of control group. I have also used relevant qualitative studies.

There are some features that strengthen the conclusions drawn about efficacy. It has been recommended that studies of treatment efficacy should take the quantitative form and thus conclusions would be based on statistical analyses. (Paul, 2004) Manipulation of key variables and collecting data on outcome measure are central. Some researchers have discussed key important features of the studies that provide strong grounds for effectiveness inferences. Often type I studies are recommended Paul (2004) . The main features of type 1 studies are presented below:

- 1) **Manualization:** Usually, the study involves subjecting part of the participants to some sort of therapeutic intervention (in our case mindfulness training). The study group might be too big so that it would be impossible to have all subjects subjected to the intervention at the same time and place. Thus several groups and trainers are needed. Manualization principle asks for clear guidelines (say for the trainers) and other measures that aim at ensuring that the participants in the intervention groups receive exactly the same manipulation (same skills, instructions and so on). If data is gathered at different places by different researchers, guidelines are made explicit so the data can be comparable.
- 2) **Randomization:** Treatment is tested against some other comparison group in type I studies. Ideally, the intervention group is tested against a group that receives an alternative treatment which has already proved to be effective. Sometimes the treatment group is compared to a group that doesn't receive any treatment. At other times, the comparison group receives the typically offered treatment (Treatment as usual – TAU), which might be psychological, psychopharmacologic or both. The two groups should be similar in all means except the intervention variable, where one group receives it and the other doesn't. Participants should be assigned to the two

groups randomly and measures should be taken to secure full randomization. In presenting a study the authors should be explicit about the way they satisfied this condition.

- 3) **Blindness:** Intervention is done and the two conditions need to be compared.

Measures are taken on the outcome variable (such as score on some depression scale) and compared. In collecting the data (for example while interviewing the participants), the researcher should be ignorant about the condition the participant was involved in if there is any risk that knowing this will influence his or her rating, as is often the case. In our case, he/she should have no knowledge whether the individual participated in mindfulness training or not. Measures should be taken and described in report to ensure this.

- 4) **Clear inclusion and exclusion criteria:** This refers to inclusion and exclusion criteria. The researchers should in advance be clear about who would be included in or excluded from the study. If say a researcher wants to study previously depressed patients, he/she should decide how severely depressed they should have been, or how many episodes they should have had etc. He/she might exclude patients with other complications such as personality disorder, drug abuse or hallucinations. This will have implications for the generalizability of the results.

- 5) **Large sample size:** The researcher should try to include as many participants in the study as possible. The larger the sample the stronger the conclusions that can be made and the better the chances of detecting effect of an intervention on a sample (avoid type 2 error).

If a study meets these criteria then more solid conclusions on effectiveness can be drawn.

Other studies that might cast light on the effectiveness of the treatment are studies that

compare a single group before intervention and after it. These are called ABA or ABAB studies (Paul, 2004). Qualitative studies may also be useful in providing information about the experiences of the participants in the intervention group.

1.1.2. Literature search for the first question of this thesis:

This thesis has as the first aim to evaluate current evidence on the relative effectiveness of mindfulness training for the prevention of depression relapse. Therefore, the criteria for controlled studies mentioned above will be taken and applied to available research. In this thesis, the discussion and conclusion will be based on results from studies that meet those criteria. The PsychINFO database has been used in order to find the already published studies on depression prevention and mindfulness. The terms used were: mindfulness, depression and prevention in title and keyword search. Studies were found that examined the effects of mindfulness training on depression symptoms. Some took a form of controlled studies whereas others took the form of ABA. The studies that met the criteria and thus would be included in main analysis are five studies. Four examining directly mindfulness training and depression prevention whereas the fifth examining Mindfulness training and a component of depression, namely autobiographical memory. Some studies were found that don't fulfill the criteria adopted here, these are referred to in some parts of the thesis.

1.1.3 The studies found in this literature search

Four of the studies identified compared mindfulness training with treatment-as-usual (TAU) (Kingston et al., 2007; Ma & Teasdale, 2004; Teasdale et al., 2000; Williams et al., 2000). In all of these four studies the mindfulness training was done over a period of 8 weeks. People in the TAU group were asked to ask for help (if needed) as they normally would do (such as seeking primary care). One study compared mindfulness training (combined with

gradual discontinuation of anti-depressant treatment) with continuation treatment on anti depressant medication (Kuyken et al., 2008).

Two of these studies examined are pretty similar in their design: one by Teasdale et al from the year 2000 and the second by Ma and Teasdale from 2004. In the first study by Teasdale et al (2000) 145 recovered recurrently depressed patients were randomized to continue with treatment as usual (TAU), or to receive in addition Mindfulness-based cognitive therapy (MBCT). Participants in the TAU group were offered mindfulness training at study end. The outcome variable was relapse/recurrence to major depression, as assessed over a 56-week period after 8 weeks of mindfulness intervention. Assessment was done by clinical psychologist blind to treatment condition using Structured Clinical Interview for DSM (SCID). The study was held at several locations and several therapists were involved. Participants were recruited from community health care facilities and by announcements in the media. The authors specify inclusion and exclusion criteria. The participants were (a) 18 to 65 years of age, (b) had history of major depressive disorder (never episodes of mania or hypomania), (c) a history of antidepressant treatment, but were off it by study time and in remission at baseline assessment and for the 13 weeks preceding the study, (d) at baseline had a score of less than 10 on the 17-item Hamilton Rating Scale for depression. Current substance abuse, OCD, eating disorder, history of schizophrenia, organic mental disorder, dysthymia before age 20, more than 4 sessions of CBT ever, current psychotherapy more than once per month and current practice of meditation more than once a week all were exclusion criteria.

MBCT was administered by trained instructors 2 hours per week for groups of 12 participants. The program included daily homework exercises which were aimed at increasing moment-to-moment non-judgmental awareness. The MBCT sessions were video- or audiotaped to allow for monitoring and ensuring the integrity of program application. The two

groups, MBCT and TAU, did not differ at baseline when it comes to social class. There were differences in mean age between the groups, and age was included as a covariate in analyses. Assessment of outcome (relapse/survival) was done by doctoral level psychologist and experienced social worker. Blindness to treatment condition was secured.

Analysis showed that the stratification with regard to number of previous depressive episodes interacted significantly with treatment conditions and separate analyses for those with two and those with more than two previous episodes were done.

Outcome data from this study indicates that for patients with 3 or more previous episodes of depression (composing 77% of the sample), MBCT almost halved relapse rate over the duration of the study. For patients with two previous depressive episodes or less, MBCT didn't have any effect. In the intent-to-treat analysis a drop in relapse rate from 66% to 40% (between TAU and MBCT) for patients with three or more previous depressive episodes was observed compared to an increase in relapse rate from 31% to 56% (between TAU and MBCT) for patients with two or less previous depressive episodes. For the per-protocol-sample the respective figures are 66% to 37% and 31% to 54%. The researchers conducted analyses to see whether the two groups (two vs. more than two previous depressive episodes) differed from each other. Results indicate that those with three or more previous depressive episodes not only were admitted to the study at an older age but also had their first depressive episode at an earlier age than those with two previous depressive episodes. These results led the authors to hypothesize that the two groups didn't only differ in terms of mean age at admittance, but might also reflect two distinct types of groups (participants).

The positive results supporting the effectiveness of mindfulness for people with 3 or more previous episodes of depression was replicated in a similar study by Ma and Teasdale (2004). Many aspects of this second study are similar to the first one except that the study was done at only one site. Stratification was done in this study by the severity of last depressive

episode and by the number of previous episodes. Patients were followed at 3 months intervals for one year after the administration of mindfulness treatment. Patients allocated to the TAU were offered mindfulness training after study completion. Randomization was done in the same manner as in the first study. Data on childhood experiences was collected in people who were involved in the study and from people never depressed matched on age and gender. Measure of Parenting Style (MOPS) was used (.....as referred in M & T 04) .. Inclusion and exclusion criteria were similar to those of the first study. Blindness of assessor to treatment condition was secured here too and the reliability of assessment indicated high inter-rater agreement. Assessment of relapse at the 3 month interval meetings included also questions about if there were any life events that preceded relapse and their significance.

For participants with 3 or more previous depressive episodes, only analysis of intent-to-treat sample was done. This is due to the fact the per-protocol sample and the intent-to-treat one for this group differed by only one participant (The ITT is an analysis based on the initial treatment intent, not on the treatment eventually administered whereas the per-protocol analysis is a strategy of analysis in which only patients who complete the entire clinical trial or other procedure analyzed). For participants with two previous episodes, both analyses were done. Of participants randomized to receive MBCT, 3 failed to come to any sessions and 3 dropped out after attending less than four sessions (which was the lower limit allowed of attained mindfulness sessions). No information was given why these people dropped out. Complete data was available for 97% of intent-to-treat sample and for 99% of the per-protocol sample. Analysis showed that baseline characteristics of MBCT and TAU participants in the intent-to-treat sample were similar. Those who completed 4 or more mindfulness sessions were compared to those who dropped out. Analysis showed that 5 out of the 6 dropouts had actually two previous episodes of depression. This difference was

statistically significant. The MBCT and TAU groups didn't differ significantly when it came to treatments obtained out of the trial.

Results of the study were similar to those of the first study. Mindfulness training lowered relapse rate for people with 3 or more previous depressive episodes but not for those with 2 previous episodes. Researchers found a significant positive linear relationship between number of previous episodes and future relapse for the TAU group but not for the mindfulness group. There was also an interaction with life events. Mindfulness was most effective in preventing relapse in the group of patients that did not report life events, and less effective when there were provoking life events. In addition, for TAU patients, all relapses for patients with only two previous depressive episodes were reported to have been preceded by significant life events. Only 10% of TAU participants with three or more previous depressive episodes reported significant life events as a precondition for relapse.

How can we interpret these complex findings? This pattern has given basis for speculations that having a series of episodes of depression may increase the chances of relapse (significant negative life events no longer needed for relapse). Mindfulness training might perhaps prevent this development. The results found here are somehow complicated and would be discussed further in the main discussion later.

Perceived early stressors in the parent-child relationship were also examined. Here three dimensions were studied: Parenting characterized by indifference, abuse or over-control. Participants with three or more previous depressive episodes scored significantly higher than non-depressed controls on all these three dimensions and higher than people with two previous depressive episodes on two of them (indifference and abuse). Participants with two previous depressions didn't differ significantly from never depressed people on any of these measures. Age at first onset for participants with two previous depressive episodes was later than for those with three previous episodes, similarly as in the previous study. Authors report,

however, that outcome differences between participants with three previous depressive episodes and those with only two in this study cannot be a function of the differences between them in terms previous parenting (relying on Cox's regressions which indicate that). So it seems that number of relapses was more important than childhood stress in predicting who would benefit. Mindfulness training might work better for people who fulfill two criteria: they have experiences of repeated relapses, and they do not "need" major negative life events in order to relapse.

In this study the strongest effect was observed for people with 4 or more previous depressive episodes. For this group, only 38% of those receiving mindfulness relapsed contrasted to 100% in the TAU group.

The effectiveness of the mindfulness treatment should be tested against some other established treatment to arrive at its relative efficacy and applicability. This has been done in one recent study by Kuyken et al (2008). In contrast to the above mentioned studies which compared mindfulness against TAU, this study compared it against active continuation treatment on antidepressants (maintenance medication). Antidepressant treatment is commonly used. People are encouraged to stay on some antidepressant for some time after their recovery in order to prevent relapse. However, many experience the side effects as intolerable and adherence can be low. Alternatives are needed and mindfulness (based on earlier findings from 2000 and 2004) is a good candidate.

Inclusion criteria are specified in the study. Researchers admitted people with history of at least three previous episodes of depression, 18-years of age or older, receiving a therapeutic dose of maintenance medication for at least the previous 6 months and is in remission from most recent episode. Exclusion criteria are similar to those of the previous two studies.

The mindfulness treatment was administered in groups of 9-15 participants. Instruction was given in mindfulness exercises (sitting meditation, yoga and body scan). Patients talked about their experiences of these exercises and reviewed together with other group members their weekly homework (such as 40 minute daily mindfulness sessions). Cognitive-behavioural skills were taught and discussed. Sufficient mindfulness training was defined as participation in at least 4 sessions. Equivalence and integrity of the program administered was secured by videotaping the sessions. Supervision, therapist competence and treatment adherence were all checked. Teachers practiced mindfulness themselves, were trained by one of the MBCT developers (John D. Teasdale) and had some experience running mindfulness instruction. Tapering of antidepressive medication was supported and encouraged. The research team in cooperation with primary care doctor aimed that all participants in this MBCT arm be off antidepressive medication in the period of the MBCT program or during the first 6 months after its termination.

Primary care doctor monitored the maintenance medication for participants in the second group. Research team asked participants and their doctors to maintain antidepressive medication within therapeutic range. Follow ups by research team every three months, self-report, practice databases and the Morisky Medication Adherence Scale - MMAS: Morisky et al. a referred to in Kuyken et al. (2008) were used to ensure adherence to the maintenance medication regime. Measures were taken so that the follow up researcher was blind to the treatment condition. If issues of adherence arose, one member of the research team not blind to treatment condition discussed the matter with participant's doctor.

Main outcome measure was relapse occurrence. This was assessed by research staff blind to treatment condition. Follow ups were held once each three months for a period of 15 months after intervention program. Similar to the above mentioned studies SCID was used to diagnose relapse. Ratings were doubled and controlled for inert-rater reliability. Severity of

relapse and presence of psychotic symptoms were assessed and recorded. The duration of relapse and associated distress accompanying relapse were recorded too. If relapse occurred, assessment of residual symptoms was done using Beck's self-report Depression Inventory and the 17-item version of Hamilton Rating Scale for Depression - HRSD: Williams as referred to in (Kuyken et al., 2008). Quality of life was assessed using 26-item World Health Organization Quality of Life instrument - WHOQOL-BREF.

Analysis was done to the data using Cox regression proportional hazard survival analysis. Data was analysed for all the data at the different follow-up periods and using both intent-to-treat and per-protocol sampling. There were 2 dropouts in the MBCT and 6 in the maintenance medication group. 5 of these were lost shortly after intake and three due to relapse of depression. For the maintenance medication group 16% were out of protocol because they decided to discontinue antidepressive medication and for MBCT 15% fell outside protocol due to participating in less than 4 sessions. There were no differences between the two groups at baseline. Those who dropped out of the maintenance medication group and those who continued the maintenance medication didn't differ at baseline or at outcome measures. The same applies to the MBCT group except that those who failed to come to mindfulness session had more suicide attempts before admission to the program. Results of the study show that MBCT was more successful in preventing relapse than maintenance medication. Relapse rates on the Intent-to-treat sample over the 15-month follow-up period were 47% for the MBCT compared to 60% for the maintenance medication group. In the per-protocol sample, 46% of the MBCT participants relapsed compared to 60% of the maintenance medication participants. 75% of the participants in the MBCT group were off medication at the end of the study. Residual symptoms were analysed and results show that MBCT was more effective in reducing these than maintenance medication. Similar to

what have been observed in the previous two trials, mindfulness program is highly applicable with 85% of those who attend from the beginning continue the program.

The fourth study that would be reviewed here is by Kingston et al (2007). The authors sought to examine the possible effects mindfulness course has on residual depressive symptoms. So, in this study and contrary to the above mentioned ones, residually depressed patients were studied. The study had a small sample size of 19. They were patients after the aftermath of a depressive episode and who had some residual symptoms and were assigned to either MBCT or TAU. Rumination measures and Beck Depression Inventory were used to assess outcome. The study had complex mixed design where in design II, those who attended TAU proceeded to MBCT and their results collapsed with results from design I (which involved comparing the first group who attended MBCT against TAU). The duration of the study was the time needed to administer MBCT and the month thereafter (time of follow up).

Inclusion criteria are clearly described in the publication of the study. Recruited participants were 20 to 62 years, had a diagnosis of recurrent depression (more or equal 3 previous ones), had residual symptoms, and had a current BDI of 13 to 45. Alcohol/substance abuse, schizophrenia and bipolar disorder were the exclusion criteria. All except two were on antidepressant treatment. MBCT was administered, as in the above mentioned studies, over a period of eight weeks, each session lasting 2 hour.

The treatment groups didn't differ on any measure at baseline as shown by t-test analysis. Analysis was done with two independent variables: MBCT or TAU and pre- and post-treatment. Rumination scale (Nolen-Hoeksema: reference not specified in research article) measures and BDI were dependent variables. Design I showed significant interaction between group belonging and pre- post-treatment. The mean BDI score got reduced at a statistically significant level from 30.33 to 12.33 for MBCT group and from 29.18 to 22.09 for TAU. Rumination score got reduced with approaching statistical significance (p value of .063) from

60.33 for MBCT to 49.33, and from 63.33 to 59.00 for TAU. Design II showed that there was significant reduction in BDI for both groups over time. For rumination the same was observed with a p value approaching significance. The researchers conclude in the paper that MBCT was useful in helping depression and reducing rumination.

The fifth study that would be discussed here is that of Williams et al. (2000). In this randomized study MBCT was compared against TAU. The outcome variable of interest for the researchers was the type of autobiographical memories participants reported after being presented with descriptive words. The participants were previously depressed and previously on some antidepressants. Some propose that people prone to depression have a tendency to recall events in a more general form. Specificity in recall for these people is decreased. The aim of the study was to examine whether engagement in an 8-week mindfulness program would produce a shift in the manner people recall events. The results showed that the generalizability in recalling events got significantly more reduced for people who took MBCT than for those who were randomized to TAU. From a methodological point of view, the study is of good quality. Randomization to groups was done (but not described in detail in publication paper), the raters of outcome measures were blind to participants' group assignment, inter-rater reliability was checked and shown to be high and drop-outs were few (analysis showed that drop-outs didn't differ on any baseline characteristic from people who continued in the study).

1.1.4. Discussion of methodological strengths and weaknesses of the existing research on MBCT

The data at hand comprises information from three large scale studies and two smaller studies. The first three are similar in design and have strong methodological basis. More technical issues can be pointed to when it comes to the two last mentioned studies.

The first three studies (Teasdale et al., Ma and Teasdale and Kuyken et al.) provide strong evidence for the effectiveness of mindfulness for people who have experienced previously at least three episodes of depression, especially when their solid methodology is taken into consideration. The authors of these studies have used sound measures in order to randomise the participants. This would secure that the participants in the treatment and TAU conditions were similar. The authors took measures and analysis to secure that the participants in the groups were similar at baseline. In these studies additional outcome measures were recorded, those that go beyond relapse data. Some of these data was reported and analysed whereas other data was left to other researchers to analyse afterwards. Application of the mindfulness treatment is judged to be sound. Participants were instructed in mindfulness in small groups that secured that all attending get maximum benefit from participation. Those who administered the mindfulness training were either the ones who have originally developed the program (the MBCT program) or were researchers who were trained by them. In addition, they had previous experience in teaching mindfulness and in some cases the researchers engaged in mindfulness in parallel at the time of the study. It would be reasonable to say that the results might not be securely generalized to mindfulness training programs due to the fact that the trainers in the above mentioned studies can be thought of having high competence, and that their sessions of high quality. As this is mentioned, it can be also said that in the Kuyken et al study, the comparison group also might not have been representative for people taking antidepressants. This group was an optimized maintenance medication group, since patients and doctors were encouraged to keep the dose of antidepressant medication at therapeutic range. However, neither of these two elements is thought of as being so serious to danger the validity and outcome of the studies.

The first two studies compared MBCT against treatment as usual. The MBCT group got involved in weekly sessions, had education in mindfulness meditation, had homework in

mediation, shared experiences about meditation and discussed cognitive processes and aspects of depression. The TAU group was asked to seek help as they would usually do. In some manner, the comparison condition here is sound since it's generalizable to many people in the aftermath of a depressive period. However, some issues can be raised when it comes to the comparison group. Ideally, the study should take "dismantling" paradigm where the treatment group and the comparison group are identical in all means except for the treatment variable (here mindfulness training) (Williams et al., 2008). If we look critically to the design of the studies that compared mindfulness with TAU and with maintenance medication we find some other variables that were not the same. The observed effects that for people with three or more previous depressive episodes, mindfulness almost halved the relapse risk can be attributed to other variables other than the mindfulness intervention. Some features of the MBCT arm that are not directly part of mindfulness training might explain the observed effect. Ideally these should have been controlled for. The fact that MBCT was administered in groups can be such a variable. It's possible that the observed reduction in the risk of relapse can be due to the group form MBCT have had. Participants had lower risk because of the supportive and possible therapeutic effect group membership can have. In fact, qualitative studies not described here report that participants thought that group membership and experience sharing in that setting had a positive impact unrelated to the mindfulness exercises (Finucane & Mercer, 2006; Mason & Hargreaves, 2001). Another factor is the contact participants have had with the mindfulness trainer. The TAU group didn't have such weekly contact with a therapist. The support and understanding the researcher has given the MBCT participants might explain the observed effects. An alternative way of considering the observed effect for the MBCT group would be to consider the effect as a consequence of engaging participants in doing something. Contrary to the TAU or maintenance medication the mindfulness participant were active in doing something to prevent relapse. Effort put on MBCT or the allocation of

time for it might be the factors leading to reduced relapse risk. Another problematic aspect of the MBCT program that complicate findings is the fact the MBCT also includes education in cognitive aspects of depression. It discusses the links between thoughts and feelings and teaches techniques for decentring from ones thoughts. These features are shared between CBT and mindfulness and applying mindfulness is not possible with the exclusion of its cognitive dimension. This issue was raised for instance by (Bishop, 2002). Alternative designs for future research, such as dismantling investigations, might provide better resolution for this issue; because we need optimally to say which effects are due to mindfulness sessions and which to CBT education.

Measures have been taken in those studies that examined depression levels (such as BDI). These however were not analysed over the course of the study and the researchers restricted the outcome variables to relapse outcomes. It is possible that the relative effectiveness of MBCT compared to TAU and maintenance medication might be due to the negative affect those in the comparison group have got because they were not assigned to get active mindfulness training. They might have spontaneously improved parallel to MBCT if they were not experiencing sad mood because of not been assigned to MBCT. This effect have been termed “resentful demoralization” (Cook & Campbell, 1979) and is also called nocebo effect. Williams et al. (2008) have examined the BDI data from the Teasdale et al. (2000) and Ma and Teasdale (2004) and found no evidence that the scores of TAU group get worsened over the course of the study. They don’t exclude however that this arm may not have shown improved scores due to bitterness of not been assigned to MBCT treatment. An issue raised by Willaims et al. (2008) in their review of current evidence for mindfulness programs is one of statistical nature. The above mentioned studies compared group on some outcome measures. The statistical analyses in the studies consider each participant as an individual and that their scores are independent of each other. This might not be the case as

shown by Baldwin, Murray and Shadish (2005) as when it comes to treatments that examine the effects of CBT. One or two individuals in the group might influence the average of the group. If there are couple of very motivated individuals in one arm (as compared to the second), they might drive the score of that group upwards and lead to inaccurate conclusions of the effectiveness of a treatment. Similarly, unmotivated or very depressed participants might cause the score of the group to be lower than it should be. Williams et al. (2008) encourage that studies comparing relative effectiveness of treatments should be aware of this factor. Measures can be taken in order to control for this issue. Intra-group correlation (IGC) measures are such. In their work, Williams et al. (2008) went back to data from the Teasdale et al. (2000) and Ma and Teasdale (2004) studies, conducted analysis, and found the IGCs were small and positive, concluding that there were minimal intra-group dependencies and that the results from the studies are valid.

These intra-group measures make the results of the two first studies stronger and more reliable. A feature of the three first mentioned studies that adds solidity to their outcomes is the fact that the raters of outcome measure were blind to the condition participants engaged in. This feature is important for reliable studies. The researchers took measures to secure blindness and the ratings done were controlled for inter-rater reliability. Coefficients for inter-rater reliability were high.

In the three first studies (and also in Kingston et al., 2007) the number of drop-outs is mentioned. This is in line with sound practice, however it was only in the Kuyken et al., (2008) reasons were given to why some dropped out. Drop-outs were few and it's unlikely that this have affected the results. In the three first studies drop-out data was excluded from the analysis, including in the intent-to-treat analysis. So the intent-to-treat was actually an available case analysis. This should not be a serious issue given the small number of drop-

outs and the fact that there is no agreement on which type of ITT is preferable (Coelho et al., 2007).

In these three first studies inclusion and exclusion criteria were described in good detail. Participants had previous episodes of depression, were in remission and had no form for personality disorder, schizophrenia or alcohol/substance abuse. These criteria can be thought of as being adequate and they are not strict. People included in the study are thus representative to many people in remission from depression and the obtained results are thus probably generalizable to a rather large population

Outcome data was collected mainly at follow up meetings. Data regarding life events and childhood experiences were collected in one study (Ma & Teasdale, 2004). Those who collected the data on relapse were trained psychologists. The follow-ups were video- or audio taped and reviewed by yet another therapist blind to treatment condition. They were scored by him/her and the inter-rater reliability was high. The outcome data of most important to researchers in these studies was relapse rates. The objective of mindfulness training is to prevent relapse. Previously depressed people are recruited to these studies in order to get training in mindfulness meditation and become aware of the pattern and thoughts associated with depressed mood. Mindfulness is thought of as being potentially a cost-effective prevention program. The outcome measure of relapse rate is deemed thus appropriate. Criticism can be however raised regarding the Teasdale et al (2000) and the Ma and Teasdale (2004) studies as these researchers collected data concerning levels of depressed mood (BDI scores) and have not included these in outcome analysis. As mentioned earlier such data could have revealed that participants in the control condition didn't improve in BDI, whereas those in MBCT did. The follow up period in the three first mentioned studies was 54 weeks. Follow ups were done each third month. Relapse rates were recorded at these times and curves that describe relapse over the study period show that for people with three or more previous

episodes of depression, mindfulness reduced relapse rate. A follow up of one year can be thought of as lays on medium range. Some might argue that the efficacy of a prevention program for depression should be considered over a period longer than one year. At the same time it must be said that a period of one year, given the effort and costs associated with longer periods, is quite appropriate. Moreover, it's unreasonable to think that any type of treatment would have a continuous preventive effect since unfavourable life events can happen at any time. The sample size in the first three described studies is large and power of 80% (at $p < 0.05$) is reported in the first one (Teasdale et al. 2000).

The last two studies, Kingston et al. (2007) and Williams et al. (2000), had smaller sample size (19 and 45 respectively). This puts limitations on the statistical power of these studies. As mentioned, the Kingston et al. study was not randomized as the authors started the study with available subjects at the time (running one arm i.e. the MBCT treatment). Because of this there is no guarantee that the treatment and non-treatment groups are the same (especially since the two treatments were administered/measured at different times). The Williams et al. study was a randomized trial making inferences more reliable here. Contrary to the first mentioned studies, the reports of these two studies were not as thorough. It is thus not easy to judge the various methodological aspects of these studies. It's not clear if blindness to treatment condition was secured and reasons for drop-out were not mentioned. In the Kingston et al. study assignment was done by clinical assessment only, without including other measures..

1.1.5 Conclusion to question 1: Does MBCT work?

Does mindfulness work? The studies indicate that mindfulness programs can help prevent relapse. The first three described studies give compatible results that mindfulness does so. At the same time, those studies indicate that mindfulness is helpful in reducing

relapse for individuals with three or more previous depressive episodes and that it's less helpful when it comes to individuals with two or less previous depressive episodes. This pattern of result makes one wonder on what way these two patient groups differ, if they do so. Why individuals with three or more previous episodes do benefit from participation in MBCT (compared to the TAU group), whereas those with two previous episodes don't benefit from participating in MBCT. The present research literature does not give a clear answer to this question. The developers of MBCT suggest that perhaps the mechanisms contributing to relapse in clients with more than two depressive episodes are different than the mechanisms contributing to relapse in clients with two episodes or less (Teasdale et al., 2000). I will discuss this when I discuss the second question in this thesis: if MBCT works, what are the mechanisms?

2. Question 2: how might we explain that Mindfulness-based Cognitive therapy works?

2.1 Theories of how depression is developed and maintained

In the beginning of this thesis, parental style and life events as factors increasing the risk for depression were described. I will describe some theories of depression which try to account in detail for the causes of depression and for the maintaining factors. The theories are varied and the scope of the paper doesn't allow for a full discussion of all of them.

2.1.1. Attachment theory

Attachment theory stresses the importance of meeting the emotional and attachment needs of the growing child (Gilbert, 1992). It assumes that shortcomings in meeting those

needs might dispose the child for depression. The nature and quality of the interaction between the child and its parents is thought to shape internal self-other schemas in the child. These are called working models and are representations of the self/other that the person would use and rely upon when interacting with others and when facing life challenges. Lack of care, abuse and disturbances in the child-caregiver relation during childhood would predispose the child for depression according to these theories. He/she would be sensitized to respond to subsequent loss in a pathological way or/and he/she would have problems in establishing subsequent adaptive attachments. Feelings of helplessness are central to depression and according to Bowlby (1980) a child might get predisposed to feel helplessness if he/she had experienced never had a stable and secure relationship with parents despite have tried to establish one. He/she would interpret future losses (or interpersonal failures) as confirmation of his/her inadequacy. Bowlby suggests also that a child might develop a sense of helplessness if he has been told how inadequate/unlovable he is, thus creating an unfortunate working model. The child would develop a tendency to expect hostility and rejection from others instead of help and concern. The message the parents give the child as he/she grows is important.

2.1.2.: Cognitive theories

The establishment of working models and schemas is not an idea found only in attachment theory but also in cognitive theories. It has been suggested by some cognitive theorists that children may learn to blame themselves for failure due being labeled by parents as having attributes of failure (Beck, 1967).

Cognitive theories have gained much attention since the 1970s and they provide frameworks for understanding depression, its maintenance and development. Aaron Beck (1967) has been an influential figure in this domain. He has suggested that negative mood is a

reflection of a set of beliefs an individual has, first about him/herself, second about the world and third about the future. This set of negative beliefs or expectations he termed “the negative cognitive triad”. He has observed that depressed people often hold such beliefs. This idea reflects a core theme in all cognitive theory: that appraisal is important in our mental and emotional lives. The event might be similar for two persons but the manner individuals interpret that event determines the way they feel about it. A person’s death might lead to the thought “I have not loved him as much as I should have” causing sadness and regret. Alternatively, it might lead to the thought “at least he no longer suffers” and thus not causing sad mood in particular way. Cognitive theories maintain also that some components of depression such as lack of initiative are caused by beliefs of futility of action (Bellack & Hersen, 2000).

The thoughts an individual has about an event might be automatic and triggered with minimal effort. He might start thinking “I am worthless/unlovable”, “no one cares”. It’s the thoughts that bring about the sad mood. Beck maintained that depressed people possess “depressive schemas” even before the onset of the depressive episode. They have tendencies to make unfortunate inferences about the self, world and future. According to Garber and Flynn the development of such tendencies is facilitated by relative absence of maternal acceptance and the presence of excessive maternal control (as cited in Bellack & Hersen (2000)). In fact, many depressed people report having had parents who have exercised affectionless control (Parker, 1992), (but as mentioned earlier retrospective reports are not that reliable). People prone to depression have also the vulnerability to infer and make global judgments regarding the events in their lives according to this theoretical stance. The meaning they make of events tends to be negative. Beck describes this as a primitive style that contrasts with more mature inferences. More mature inferences are described by Beck and colleagues as multifaceted. Events are categorized along several dimensions and in relativistic

rather than absolutistic terms (Beck et al., 1979). Vulnerability to depression arises because of learned schemas in childhood that at adult age interact with life situations. Beck suggests that the vulnerability remains latent until life stress makes it evident (Gilbert, 1992). The individual comes to develop a set of negative thoughts about himself, others and future and he also comes to associate certain attitudes to certain attributes, for example: “It’s bad to be weak” “It’s terrible to be stupid” (Beck, 1967). These thoughts get activated in face of stressful life events and make the mood of the individual worse.

As mentioned earlier Beck maintained that a child might start seeing himself as inept because of being labeled so. At future instances of failure, the idea of being inept will get reinforced and the image the person carries about himself gets even more negative.

Another set of ideas in the cognitive theory of depression comes from the work of Abramson, Seligman and Teasdale (1978). They have proposed an attributional theory of depression, which in many ways incorporates a stress vulnerability model. According to them we experience sad mood when we are faced with unpleasant events that are beyond our control and this might develop further into serious depression if we hold certain beliefs about the causes of the events (Abramson et al., 1978). Attributions for the causes of events can be classified across three dimensions: internal-external, stable-unstable and global-specific. Facing uncontrollable unfavorable events causes people to look for the causes of those events. Generally, if the causes of a negative event are invariably perceived as being internal, stable and global, then the person will be prone to experiencing depression in face of a major negative life event. The failure or the negative event is perceived to be due to stable and internal deficits, and thus the individual will think that the same state of affairs will remain in the future. This way of attribution causes hopeless view of the future and a drop in self-esteem. Thinking this way in face of a negative event would cause dysphoric mode and helplessness. According to these researchers, people differ in their attributional styles even

before the onset of depression. This idea is similar to the ideas of Beck who also maintains that depressive cognitive style precedes depression. Those people who tend to make those inferences are said to have a depressogenic inferential style. Questionnaires have been developed to assess peoples' inferential style. Normal controls tend to attribute success to internal causes and failures to external unstable and specific causes in a way that can't be thought of as fair-minded (a response tendency that social psychologists call self-serving bias). Depressives tend to attribute failures to internal, global and stable causes. Data suggests that it's not that individuals think that negative events are by themselves uncontrollable but that they as individuals don't have the ability to control them. The question of whether these differential attribution styles can predict future depression is hard to answer due to mixed research results.

2.2. How might cognitive therapy work?

Since Mindfulness Based Cognitive therapies build about some of the same basic assumptions as cognitive therapies in general, it is relevant to ask whether these might be working in the same manners. MBCT differs from cognitive therapies in what the affected person is asked to do in relation to his or her thinking. While MBCT encourages the affected individual to let unwanted thoughts just come and pass, rather than to discuss their validity with him/herself or a therapist, traditional cognitive therapy suggests that patients discuss the "evidence" of their beliefs with themselves and their therapists. However, both MBCT and traditional cognitive therapies suggests that a treatment for depression must help patients change something about their way of thinking, and both believe that thoughts affect feelings in important ways. They assume that patients' attribution style might contribute to cause or

maintain depression. Research on what might characterize the thinking of depressed persons, might also help us understand how Mindfulness Based Cognitive therapy might work.

2.2.1. Research on cognitive theories of depression

Cognitive theories are part of the theoretical grounds for mindfulness based cognitive therapy for depression and cognitive methods are usually combined with mindfulness exercises (as the name MBCT suggest). Attribution styles in depression have been discussed earlier. It's difficult to prove that those unfortunate attribution styles precede the development of depression (Bentall, 2003). Some longitudinal studies have failed to find strong relationship between previous attribution style and later development of depression, but they have found that earlier life events can predict depression (Hammen et al., 1978). Bentall (2003) cites a study by Alloy et al. that gives some evidence that attribution style can predict future negative mood. Results on total are mixed and inconclusive. It's also doubted by some that dysfunctional negative attributions include thoughts about the future. Instead, they may be restricted to views of self and the world (Gilbert, 1992).

The views of the self and the general level of self-esteem can get worsened as the individual experiences depression. The path between unfortunate attribution styles and depression might be mediated by the effects those attributions have on self-esteem. This is shown in a study by Romney as cited in Bentall (2003).

Cognitive processes interact with the way we feel in some other different ways. We can think of ourselves as we would like to be (Ideal self) and as we ought to be (Ought self) (Higgins, 1987). We are motivated to gain desired outcomes of the ideal self and avoid undesired outcomes of ought self. The self as perceived is referred to as the actual self. Research shows that people prone to depression and normal people when depressed show

great discrepancies between actual and ideal self (Strauman as cited in Bentall (2003)). These researchers have also shown that if people are made to perceive/contemplate discrepancies between actual and ideal self, they experience negative feelings with physiological markers. As would be mentioned later, depressive thinking is often ruminative. Having much perceived discrepancies between actual and ideal self thus fuels ruminations, makes mood worse and prolongs depression. This is important when thinking about the means mindfulness can break the vicious cycles of depression and help it. Some studies show also that people who have experienced depression and are thought of being prone to it engage in more social comparisons than normal healthy controls (Bäzner et al., 2006). This also can provide material to engage in unneeded rumination.

A relevant idea here is that people who suffer from depression score higher than controls on measures of dysfunctional attitudes such as “My value as a person depends greatly on what other people think of me” or they would agree more often with a statement like “I should be able to please everybody” (Bentall, 2003). People who score high on this tend to relapse at greater degree than others. Thus individual self-standards are also important to understand depression, its’ relapse and prevention.

The beliefs people have about themselves, the standards they use, attributions and life events interact to produce depressed mood. In an ingenious experiment by Kaney and Bentall as cited in Bentall (2003) failure was manipulated and its relation or interaction with self-schemas was observed. When depressed people are subjected to failure in experimental setting, one would hypothesize that they would make internal attributions for that failure. Researchers speculate that failure activates already established negative self-schemas. Activating these would set the depressed person on a mood where he/she would attribute further (subsequent) events as their own products (Bentall and Kaney as cited in Bentall, 2003). Translated in real life, people after major adversity would be more likely to

understand/attribute even normally occurring “failures” as caused by internal unfortunate features of themselves, and thus making mood worse. The way they would appraise future negative experiences changes as a function of their reaction to current adversities. The beliefs about the self become even more negative and set the stage for further negative attributions in the future. This idea here is similar to what some other psychologists say about the relationship between previous depressions and future changes in mood (discussed later). Back to the experiment, normal subjects did not get influenced by the failure manipulation and showed no subsequent bias to respond with internal attributions, while depressed individuals did.

The observations made in the experiment of Bentall and Kaney have also been made in other experiments. It has been shown that dysphoric people do engage in some kind of heightened self-focusing after failure, to a degree stronger than what they would do after success and to a degree stronger than what normal controls would do (Pyszczynski & Greenberg, 1985). The concept of self-focusing is important for some researchers and they claim its central role in the onset of depression (Barlow, 2000). It's not only at onset that self-focusing is relevant to depression but also for the maintenance of it. Everyone experiences stressful life events, but yet some this leads to and develops into major depression. Negative mood can be experienced by everyone and all are motivated to do something about it. Yet, the mechanism and ways people go about dealing with adversities and sad mood are different (Bentall, 2003). People who experience depression and emotional stress are rarely passive about it; they try to cope with it. Research shows that some strategies that people use to cope with sad feelings might have the unfortunate effect of maintaining that sadness. It's assumed that it is the way people react to sad mood that plays a role in determining the duration and nature of that experience. This is the reaction-maintenance principle (Bentall, 2003). Focusing negatively on the self is a reaction tendency people might develop in response to failures and

it might have effects in the feelings of sadness and its maintenance. Some research, such as that of Barden, Garber, Leiman, Ford, & Masters, 1985; Gibbons et al., 1985; Scheier & Carver, 1977; Pyszczynski, Holt, & Greenberg, 1987; Pyszczynski et al., 1989 all as cited in Lyubomirsky & Nolen-Hoeksema (1993), that has manipulated the degree of self-focus people engage in has shown that dysphorics who are made to self-focus would sustain or increase their negative mood, and those that are made to focus away from self showed reductions in depressed mood. Self-focusing has also made subjects more pessimistic about the future and made them remember more negative experiences from the past (Lyubomirsky & Nolen-Hoeksema, 1993).

Rumination is a form of self-focusing and has been a central concept to some theories, such as that of Nolen-Hoeksema (1991). Depressed persons might ruminate about the sad mood they have found themselves experiencing. Their ruminative responses are thoughts and mental behaviors that focus on their depressive symptoms and the causes for the way they feel. In her article the author gives some examples of what the ruminative thoughts might look like:

“thinking about how tired and unmotivated one feels, wondering if ones problems in sleep will continue, worrying about how the dysphoria is affecting ones work or ones family life, and wondering what is wrong with the person that is making him/her dysphoric”. Everyone can get such thoughts at times but for some people these thoughts might perpetuate and some might continue to ruminate about them. Some people would act effectively to find solutions to whatever makes them feel sad or they might engage in distracting neutral or pleasant activities to escape the sadness and rumination. Those who continue to ruminate about the sad feelings would experience prolonged period of sad mood and their sadness might get intensified.

Focusing and rumination can take several forms: some people might start thinking again and again wishing an event had gone differently or they might seek continuously more information before they commit an action. Engaging in these moods of thinking makes mood worse (Coyne, Aldwin, & Lazarus, 1981; Felton & Revenson, 1984; Coyne et al., 1981; Folkman & Lazarus, 1986; Miller & Lewis, 1977) as cited in Lyubomirsky & Nolen-Hoeksema (1993). The

authors also cite other studies done by them and others that show that distraction, engaging in pleasant events and denial might be adaptive, these lift mood and enable arriving at effective coping strategies.

In their study Lyubomirsky & Nolen-Hoeksema (1993) had encouraged some dysphoric subjects to ruminate by asking them to think about their negative feelings, their causes and their potential consequences. This has caused their mood to get worse, made them make more pessimistic and negative attributions for hypothetical presented events and interpersonal problems. The researchers encouraged another set of dysphoric subjects to distract themselves from their feelings to external objects (such as to locations on a geographical map). These subjects didn't show that response pattern shown by those who were instructed to ruminate. In fact they made no more pessimistic attributions for hypothetical events than what non-dysphoric controls made. The study showed also that those who were made to ruminate later gave less efficient solutions to hypothetical interpersonal problems than those who were encouraged to distract themselves.

As the study shows rumination makes mood worse and at the same time it inhibits engaging in some other activities that may provide distraction and enjoyment. Ruminators may have low efficacy expectancies regarding doing other distracting activities. Because of the way they feel themselves as lethargic and tired, they might think they are not in shape or mood to do anything else. Thus they would continue to ruminate once they have started. Their feelings of feeling low, depressed and stressed might inhibit them from thinking about the potential benefits of engaging in some other activities. As they engage in rumination, dysphoric individuals might think they are gaining some benefits by ruminating. Lyubomirsky & Nolen-Hoeksema (1993) suggest that these individuals might feel, as they ruminate, as if they are gaining some insight in their problems and that by using more time on ruminating they might be on the path to arriving at some solution for their problems. As they ruminate

they start to remember past negative events and by engaging in analyzing these they might think they are doing the right thing and that they would come at a solution.

Summarizing what have been said about rumination one can consider a model for depression proposed by Pyszczynski and Greenberg (1992). In their book they emphasize the role that self-regulatory processes plays in depression. Depression starts usually in the aftermath of a central loss for the individual that undermines his/her self-esteem. Main effects of a loss are sadness and possibly anger and anxiety. But the manner the individual relates to the loss is the central thing to the development of negative affect into depression. Those who tend to get depressed are those who engage in what has been termed “self-regulatory perseveration” which is essentially persistent self-focus regarding the lost object. They are not tempted to disengage from thinking of the loss or to distract. They narrow their attention to what cannot be obtained and withdraw from activities that might give them relief, positive affect and mastery experiences. As they focus on the loss they might think that they are the ones to blame for the loss (which often is not the case; one of cognitive therapy’s objectives is to correctly place responsibilities). Ruminating about the loss would also impair energy levels and concentration to other important tasks. Combined with some negative affect the individual already has that might lead to failures and new problems. These would feed into negative self-image and depressive style of focusing. The authors also maintain that the initial self-regulatory perseveration and the ruminative self-focusing style may lead to restlessness, sleeplessness and/or drug/alcohol abuse. These in their turn would impair functioning further and worsen the self image. The negative self-image would feed back into the depressed affect and initial anxiety and a vicious cycle is in action. The authors suggest that self-focus style has an important role in the development and maintenance of depression.

Important here is to draw a line between what have been said earlier about actual and ideal selves. Self-focusing involves such comparisons and it’s also important to mention that

for everyone it's vital to self-focus. This self-regulatory process is needed for the direction of goal-oriented behaviors. We need to monitor our behavior and circumstances and see if we are on the path to arriving at an important goal. The purpose of self-focus is to reduce discrepancies, but when these cannot be reduced because of factors that lie beyond individual's control, he or she needs to disengage from that goal adaptively. As some theories suggest that a way of disengaging from a desired object is by reducing the value attached to it (Brehm, 1966). The observation mentioned earlier about the internalizing of the causes depressed individuals do is consistent with research from self-regulatory processes: The more self-focus an individual engages in the more is the internality of the attributions (Pyszczynski & Greenberg, 1992)

2.3. How might mindfulness work?

As stated earlier the goal of this paper is to evaluate mindfulness as a therapeutic intervention for depression. Mindfulness has roots that go back to Buddhist traditions but has been launched forcefully as an intervention for bodily and mental complaints since the early 1980s. Originally adopted in the West for the management of stress reduction in late 1970s by Jon Kabat Zin and then adopted by others for helping to prevent relapses to depression and to cure anxiety disorders. Reviewing mindfulness involves talking about mind tendencies and attentional processes. Mindfulness can be conceptualized as an attitude to experience or as a way of being. As a way of being it has been defined as awareness of present experience with acceptance (Germer, 2005).

One major way our lives are organized by is that of having a set of aspirations. Things that we would like to attain and yet others that we make our best to avoid. Through interaction with primary caregivers at early years of life and through all the events that we have

encountered as we grew up, we develop a set of preferences for what is desired and what isn't. Mainly these preferences are shaped by conditioning. We learn what is rewarding and what is not. And we learn what would be appreciated by others and would not. The things and preferences that we all have are many and all the time we make decisions and shape our behavior in a way that would meet these preferences.

From a biology or cognitive perspective it would be beneficial or efficient to go along our daily life with some automated responding. We might be amazed by the magnitude of things that we do with minimal conscious awareness. Our minds seem to know what to do. This aspect of our functioning is highly adaptive. But what about when our minds get in unfortunate ways of reacting and operating?

That a scene or mere thought can trigger another is known for everyone. That's the nature of our mind. Our knowledge systems of ourselves, past, future and the world, along with the emotion centers in our brains are all interconnected. A main feature of the biological system is that of priming or spread activation (Eysenck & Keane, 2005). We wouldn't have managed to function if upon setting to prepare dinner we wouldn't remember the ingredients and the procedure of making the meal. The same applies to our emotional lives. As we interact with the environment around us and as we go about attaining our goals, our bodies react physiologically and emotionally to what is happening. As presented earlier, a minor failure for a somehow depressed person might bring images of previous failures and might feed negatively in the way he/she is feeling. The process of a thought activating another, an image making us feel cheered up or failure making us feel sad is an integral part of being human. Usually we are not aware of the wandering from a thought to the next. Neither of the dependency of a slight feeling on a thought that just came to mind right before it.

Basically mindfulness is a way of relating to experience (Germer, 2005). It's proposed as an alternative way of relating to experience than what people usually do. Cultivating

mindfulness would lead optimally to being less reactive to what is happening in the moment. Usually we are caught up with the things that should be done and the things that to be avoided. As we encounter events in our lives we tend to have distracting thoughts relating to these events and the mind has the habit of making opinion of what is going on. This can be called “mindlessness” and includes rushing through activities without paying attention to them, breaking things because of inattention, failing to notice subtle feelings of physical tension, forgetting a person’s name upon hearing it, preoccupation with past or future or/and snacking without being aware of eating (K. W. Brown & Ryan, 2003).

In the context of this paper and as it focuses on depression, being mindless is synonymous with the tendency of depressed people to be preoccupied about the future or the past. A depressed person might upon failure start to dwell about that that went wrong. He might bring to mind images of failure from the past and he/she might dwell on self-pity feelings and ponder why things “always” turn this way for him or her.

What is the alternative? Mindfulness for this person would be taking a stand away from these particular thoughts and images and instead taking the current moment as it unfolds. As defined, mindfulness is concerned with experiencing the current moment as fully as is possible. According to this discipline, all what we have is the current moment. Mindfulness involves also an attitude of not being judgmental. When mindful we don’t engage in judging events in terms of being positive or negative. This is because mindfulness is openness to experiences as it is. We just observe and possibly label the events in our minds, such as saying to ourselves “(that’s) remembering”, ”judging” and so on. Along with non-judgment, mindfulness involves being kind and compassionate to whatever unfolds in experience. It’s willingness to accept the contents of ones experience, acceptance of the thoughts and images that come to mind. Positive and negative thoughts and images are accepted. Pain (say for some objects loss) is accepted and kept in the experiential field, not feared or turned away

from. As mentioned earlier, an appearance of such a thought (of a lost object) might cause unease for the depressed person and one might seek to avoid it. One might start analyzing and intellectualizing. One may try to structure thoughts up in one's minds in a way that one hopes make the pain go away. This leads to expenditure of energy in trying to control thoughts. This is rumination and seldom is it helpful. Usually it makes things worse. Mindfulness in the other hand discourages avoidance and "fighting" a thought. Rather it encourages approaching a thought, giving it full attention and acceptance (Williams et al., 2007). This may counteract the tendency to avoid difficult thoughts and feelings that characterize some depressed individuals, it is worth mentioning that depressed people engage often in avoidance of difficult thoughts and feelings (Borkovek et al., 1995).

Depression also involves a fusion of thoughts and self-experience. Thoughts are not seen by depressed people as passing events in mind. Mindfulness encourages this later attitude: to see thoughts as passing events in the mind.

2.3.1. Mindfulness in therapy

Mindfulness, as said earlier, then can be defined as awareness of present experience with acceptance (Williams et al., 2007). Applied in practice that would mean that for a patient instead of saying to oneself "that's painful, I wish x didn't happen" saying "pain is integral part of life" and taking a breath out. The tension or emotional clinging the patient otherwise would be experiencing when encountering the original thought would be let pass by at the out-breath. Here we see a contrast between approaching and avoiding a thought or a feeling. The significance of this quality of mindfulness meditation for feeling better would be discussed later.

To arrive at the goal of mindfulness training of awareness of present moment and acceptance, teachers employ a set of practices. Some are termed formal while others informal.

Formal mindfulness practices means setting aside some time 15-45 minutes a session where the only thing an individual would be doing is mindfulness. Informal mindfulness practices involve bringing the same type of awareness cultivated during formal practices to everyday activities.

Formal practices, which are essentially meditation practices, can take several forms. Mindfulness of breath is one major one, but there are also mindfulness of body sensations and mindful waking. When a person is engaging in mindfulness of breath, he/she is asked to focus on the sensations of his/her breath. To keep attention with each breath as it gets in and out of the body. He/she might be encouraged further to follow mentally the sensations of the belly or the movement of air through the nostrils. Thoughts might arise and the individual might start thinking of some other thing. The individual is instructed to take notice of the wandering of the mind, to see this as a natural tendency of the mind, and to get back and attend further to the breath. He/she might in his or her mind deliberately label the mental event that distracted his/her attention. He/she might use labels of “judging”, “anticipating” and so on. The main instruction is being open and attentive to present experience rather than letting one’s attention drift to past or future. The breath provides an anchor. Thoughts can be released and let slip away at out-breaths. Taking an in-breath is suggested by the instructor as an opportunity to widen up moment to moment presence. When it comes to bodily awareness, body-scan techniques are used. The individual is asked to let his or her attention float across the different body parts. He/she would be engaging in scanning the body, feeling contact with the floor, attending to the temperature of the body, sensing pain and itching feelings. Walking mindfulness exercises try to arrive at the above mentioned objectives by closely observing the movements of the body/muscles during waking. Some mindfulness exercises take the form of hearing exercises, the participant is asked to attend to the sensory information that comes to hearing modality and make it his/her object of awareness.

Mindfulness stresses and tries to accomplish a state at which the individual would not accept thoughts as facts and to arrive at a sense of separateness of oneself from the thoughts and images that one might arrive at. Seeing thoughts from a distance and as passing events that don't necessarily reflect reality is a goal and effect of mindfulness. The individual might be encouraged to see thoughts as clouds on a blue sky. His/her attention should encompass the whole sky. Breathing in and out as the thoughts come and go supports the feeling of detachment and separateness from the thoughts. Mindfulness involves watching the thoughts as they appear in the mind without responding to them. In reaction to an unpleasant thought the individual is encouraged not to attempt to rationalize the thought away or get engaged with it (Allen & Knight, 2005).

In their book Williams et al. (2007) propose that there are two modes of mind which they call the "doing mode" and the "being mode" of mind. The "doing mode" of mind is a common state of mind for most people. People set goals for themselves and constantly monitor where they stand in relation to those goals. We have already talked about actual self and ideal self and that people are motivated to reduce the discrepancies between these two. The observation of a discrepancy between how things are and how we want them to be produces negative emotions such as dissatisfaction, which trigger sets of habitual action patterns. We monitor states until hopefully arriving at the desired outcome. We analyze what have passed and imagine the desired future. This according to the authors is the doing mode of mind. In contrast, there's the "being mood". In this mood we don't set to achieve any particular goal, but rather we get immersed in the present moment. All what happens in the mind of thoughts and feelings is allowed and accepted. No energy is expensed in monitoring or controlling the thoughts and mind and what is present in the inside and outside is given attention and is embraced. The discrepancies that might be observed don't have the same power to push us into action (being mental or actual). Rather they are allowed, observed and

let to subside away. We don't try to eliminate negative feelings, just letting them pass away. Mindfulness training involves being better able to recognize the doing mood, and at the same time it gives us opportunity to know what being mindful is really about. As mindfulness skills develop the pathway between thoughts/triggers and overt behavior becomes clearer. The time that passes from thought to action gets noticed and this would provide us with better ability to postpone action if we decide to do so. The patterns of conditioned reaction ways get cleared up in mind. Training in mindfulness facilitate an aware mood of being, characterized by freedom of choice, contrasted to a mode dominated by automatic and habitual patterns of affective processing (Teasdale et al., 2000). All of these points would be of significance for an individual trying to avoid depression.

2.3.2. Mindfulness based treatments for depression

Depression is a recurrent disorder. In a review it has been concluded that unipolar major depressive disorder is a chronic, lifelong illness, with risk for repeated episodes exceeds 80% and that patients would experience an average of 4 lifetime major episodes of 20 weeks duration each (Judd, 1997 as cited in Teasdale et al, 2000). Maintenance psychotherapy and continued drug treatment can be used in order to prevent relapse. However, these are costly, may have unwanted side effects and alternative measures can prove helpful and more efficient economically. Mindfulness-based treatments for depression were developed to this purpose (Kuyken et al., 2008). Cost efficacy is enhanced in mindfulness-based treatments since these are applied in group settings (at least in the form these studies presented here in this paper took) (Kuyken et al., 2008).

At the theoretical ground for mindfulness-based therapies lies the assumption that people who have recovered from depression are different from those who never have experienced that (and currently depressed for first time). It's suggested that vulnerability for

relapse arises due to repeated associations between depressed mood and patterns of negative, self-devaluative, hopeless thinking and rumination during episodes of major depression. The suggestion is that cognitive and physiological changes occur that would make the previously depressed patient vulnerable (Teasdale et al., 2000). The thinking triggered by dysphoria (otherwise passing depressions of mood) for the recovered depressed patient would be similar to the thinking patterns previously experienced while depressed. The reactivated patterns would maintain or intensify the dysphoric state by way of ruminative processes. For people previously depressed, states of mild dysphoria (if not managed effectively) would lead to more serious and persistent states. Accounts at biological and cognitive levels support this notion that with repeated experiences of depression, less environmental stress is required to initiate recurrence (Post, 1992). As have been suggested earlier in relation to ruminative thought patterns and in reviewing cognitive ideas on the role of negative thought patterns, allowing patients or giving them opportunity to disengage from these patterns would have the potential to prevent submerging into serious depressive states. This is the ground for implementing mindfulness-based treatments.

2.3.3 How might MBCT work?

How does mindfulness reduce relapse rates for previously depressed individuals? Several mechanisms can be thought of as contributing to the effects of mindfulness. The first mechanism becomes clearer as we review the nature of depression it self. As said earlier, a central theme in depression is the accompanying sense of helplessness and hopelessness. The depressed individual feels sad and discouraged, the feelings can be intense at times and he/she might think that it would be always this way for him/her. The future is seen as gloomy and there is no hope. The sadness and pessimism that are central features of depressed individual can persist and invade. For anyone, previously depressed or never, these feelings are difficult

and individuals are motivated to avoid these feelings and replace them with better ones. The cognitive vulnerability that some individuals have, which would be elaborated further later, can perpetuate these feelings and make them more persistent. The depressed individual sits with these feelings and tries to make them go away. As mentioned earlier, some might start analyzing situations and try to explain for themselves “why me”, “why I feel this way” or “I wish X didn’t happen”. They give in for rumination and can become absorbed by the negative sad feelings. Relevant to the first mechanism (that mindfulness work by) discussed here, is not rumination per se, but rather the fact that the sad feelings and gloominess becomes an issue for the individual. These difficult feelings become target of thought. Attention and effort are directed to these feelings on an attempt to make something about them. The person can feel discouraged and sad about the way they feel. Some individuals develop depression about depression (Teasdale & Barnard, 1993). In their model Teasdale and Bernard (1993) present this feature of depression along a comprehensive model of depression. According to them, an important aspect of the depressive experience is the working of depressogenic schematic models. Interacting with life events, these models are responsible for the generation of depressive thoughts and subsequent feelings, as well as they get influenced by the later (Contrary to the cognitive model, this model propose that it’s not concrete thoughts that lead to sad feelings but more higher level and generic cognitive models – that are partly shaped by previous experiences of depression). The thoughts about the sadness that accompanies depression get integrated in these schematic models and become target for thought production and ruminations. For example, the person might think that “this only happens to me, why me”? Or “These feelings are permanent”. The authors maintain that these and other thoughts about depression itself can get particularly problematic if the depressed individual lacks information about depression, sad mood and regular shifts in affective experience. This way the original depression related schematic models get elaborated (negatively) and synthesized

in even more troublesome models because of the feelings of depression (and its experience: such as the low mood, restlessness and sleep problems that might be part of depression). For individuals experiencing this, sadness might not be alternatively considered as a feeling that anyone can have at times or that it is transient. However, depressed individuals tend to take the sad feelings as aspects of characterological deficiencies that they never would be free from. Thinking this way the individual would get discouraged to try coping with the sad feelings and he/she might start engaging in self-blaming. Giving up coping (as opening one's heart to a friend or engaging in a distracting activity) reinforces the depressogenic schematic models and the situation continues to look hopeless.

It has been suggested that effective therapies for depression work partially by breaking the vicious circle of depression about depression (Teasdale & Barnard, 1993). Instead of thinking that depression is aversive, uncontrollable and unavoidable, therapies provide the patient with tools, understandings and structures that make them view depression as understandable, normative and modifiable. Some authors (Teasdale, 1985; Zeiss et al., 1979) suggest that effective treatments provide patients with structure, understanding of the depressive experience, treatment rationale and how it's linked to the depressive experience and coping tools to manage sad thoughts and feelings. Doing so, these therapies help the patient shift his/her view of depression from being hopeless to manageable and modifiable. Back to the ideas of Teasdale and Barnard (1993) these features of effective treatments modify the problematic schematic models causing depression to perpetuate. As individuals have good understanding of their experiences and have tools to manage sad feelings, they will be more motivated to cope actively. Doing so would give them relief, maybe at small transient quantities at the beginning, and these new experiences of relief would encourage them to cope further. This would modify also their view of depression as uncontrollable and inevitably aversive. Evidence exists that therapies are effective by providing alternative, more adaptive

models of depression and accompanying experiences. The degree patients benefit from a given therapy is a factor of the degree the rationales of the therapy “meshes” with preexisting conceptualizations of depression (Addis et al., 1991). Adopting functional and adaptive new models for depression leads to better management of sad mood and new experiences of relief. The vicious circle thus gets broken and the underlying assumptions that were previously problematic get normalized. Optimally therapies provide patients with new conceptualization models and tools and at the same time they encourage patients to rehearse the use of the new skills.

Do mindfulness programs provide adaptive new models for depressed individuals? Mindfulness programs are highly structured and they are carried over a period of several weeks. The individuals are trained in mindfulness at the group sessions and encouraged to engage in mindfulness training formally and informally in their life. The cognitive component of MBCT adds new way of thinking about the sad feelings and the intrusive difficult thoughts. Fusion of thought and self is discouraged and the participants are asked to start considering facts as mental events that can be observed at a distance. Training involves focusing attention on a particular object (mainly the breath) and to engage fully with it. As the mind wanders, attention is disengaged and brought back to the breath. This training supports the separation of self from thought. At the sessions, the leader discusses the links between thinking and feeling and participants are encouraged to notice the link and transition between the two. Being able to detect sad mood at an earlier stage is also a goal of the MBCT program. Mindfulness training can be initiated in face of sadness. As we consider these aspects of the MBCT, we see that it provides a package of tools and insights that make participants come to experience their sad mood in new ways and they would be better motivated and able to modify it. Thoughts and concerns about the uncontrollability and a non-avoidable conception of sad mood get replaced by more favorable ones. The contribution of sadness due to concerns about

depression itself gets reduced; that's to say the vicious circle of depression about depression gets broken.

The idea presented above can be understood in the framework of the model proposed by Teasdale and Barnard (1993) just mentioned. They propose the Interacting Cognitive Subsystems framework (ICS) as a theoretical structure to understand depression. Cognitive vulnerability to depression can be understood not merely as depressogenic thoughts leading to sad mood, but rather as cognitive structures and processes (malleable by experience) that their total configuration at a time in an individual's life can put him/her more at risk of developing depression. An important aspect of the model is that of schematic models. Vulnerable individuals have schematic models different from those of more resilient individuals. Seeing depression as normative, common, aversive feeling state that anyone can experience at times and that coping actions make it temporary leads to different behaviors than seeing it as a reflection of one's own inadequacies and weaknesses. The first view leads to seeking relieving pleasant experiences and distractions whereas the second makes the individual wonder and ruminate about what's wrong, why him/her.

The studies presented in this thesis had duration (follow up time) of maximum one year. Long term effect of mindfulness training on depression relapse has been observed. Further studies are needed to establish the potential length of these favorable effects. Yet I can speculate that as patients get new experiences of managing sad mood, new memory traces related to coping successfully with sadness get established. As the individual meets adversities and sadness in the future he/she would draw upon the previous good experiences at managing sadness in order to tackle the new situation. He/she would gather up the efforts and strategies (such as distraction i.e. avoiding rumination, or taking a breathing space etc.) in order to manage sad mood. The individual would have thus better chances counter-acting sad mood than what he/she would otherwise have had had he/she lacked previous mastery

experiences. The study by Zeiss et al., (1979) which compared various therapies and efficacy is relevant here since it showed that an important component for successful therapy is giving the patient a mastery experience over his/her condition.

A point touched earlier is the relationship between the rationale of the treatment and willingness to adopt it (and resulting positive effects). The more strong the rationale the better the application of the treatment by patients. MBCT stands strong when it comes to this issue. The cognitive components of MBCT derived from cognitive therapy provide good understanding framework for mental thoughts and affective experiences. Regard of thoughts as passing mental events that need not be clinged to provides patients with more favourable ways of relating to thoughts; on a sense a new, attractive, perspective on thoughts. Noting changes in mood and thinking tendencies are ought to interest previously depressed individuals, specifically when becoming more aware of the link between initial reaction to sadness, possible rumination and subsequent worsening of mood.

In an earlier section of this thesis studies have been presented that elucidate the relationship between rumination and sad mood. Self-focus of the ruminative type that takes the form of repetitive dealings with negative feelings and thoughts, thoughts that might concern the self (about believed shortcomings), reasons for negative outcomes, wishful thinking, “clinging” to lost unattainable objects, “negotiating” fear attached to future possibilities and dwelling about discrepancies of current state and desired one are all forms of thinking that usually lead to worsening of mood. Weakening the hold of such type of thinking is supposed to prevent and help sad mood. It would be advocated in this thesis that mindfulness / (and training in it) helps prevent relapse (by way of its effect on rumination) by two pathways. One way by preventing worsening of mood due to giving in for rumination (at the concrete mindfulness session) and by a second way of training up the attentional system to

be better capable of managing negative thoughts (as a function of continued regular mindfulness training).

A negative thought might arise and subsequent sad mood would be experienced. Mindfulness prevents the escalation of this experience into more difficult one by encouraging the individual to be attentive to the present moment. In this manner, ruminative tendencies may be aborted. By anchoring attention in the present moment, rumination is displaced by present-moment awareness. Mindfulness helps the individual to anchor in the present moment. This is done by having attention continuously attached (repeatedly brought back) to the breath or the body sensations (as in the body-scan technique). Focusing on the breath allows the individual to be present to the unfolding of the ongoing moment. The mind wanders and this natural tendency of it is made clear to participants of MBCT. Thoughts and sensations arise but here with the background of widened attention to breath, air flowing from and out of the body and the sensations of the environment (or bodily sensations in the case of body-scan). Thoughts are not elaborated on but are observed with a decentered attitude. An unpleasant thought can be let pass by, categorized or labeled. They can be given proportionate size by labeling them as “judgment” or “thinking”. Rather than avoiding the difficult thoughts or getting absorbed mentally with them, mindfulness keeps an attentive, open and fleeting form of awareness which entails also a more relaxed form of awareness and experience. In some respects it can be said that attention for the breath gives a means of shield (a form of distraction) that protect the individual from being carried away into aversive thoughts , intellectualizations and ruminations.

As suggested so far, mindfulness encourages openness to whatever arises in the mind. Thoughts and sensations are not avoided, but accepted as natural phenomena. One important factor that may contribute to the effectiveness of mindfulness in preventing relapse is by allowing previously depressed patients to deal with difficult feelings. Unprocessed and

avoided feelings can become troublesome and fuel sadness and low mood. Not allowing oneself to fully embrace, accept and feel the death of a loved one might perpetuate sadness, anger or self-blame. Not being able to handle and process grief, can in the longer term, make one suffer more. Mindfulness training and meditation sessions signify for a person a secure and familiar context (or activity type) that allows the experience of the sadness attached to such loss. The thoughts, images and feelings are allowed and accepted, in spite of their difficult nature. From work on grief we know that such an open attitude helps the process: it helps to sort the memories and the narratives attached to the deceased loved person (Parkes, 1986). The studies presented in this thesis don't highlight this component of mindfulness training but evidence for this aspect of the program comes when considering qualitative studies where patients report such effects of mindfulness such as that of Mason & Hargreaves (2001). Loss in all its forms can be troublesome and lead the individual into depressed states. Yet it's the clinging to the lost object, or repetitive thoughts concerning personal responsibility that make the sadness perpetuate. Mindfulness gives the individual opportunity and space to grieve the lost object and helps normalize the thoughts associated with it.

The very last point suggests yet another mechanism for the effectiveness of mindfulness in preventing relapse. This remains speculative but yet has some appeal: Mindfulness involves an open attitude, acceptance and a relaxed stand when it comes to raising thoughts and feelings in the mind. In this decentered relaxed mental context, it would be more likely that adaptive and effective solutions to troubling thoughts arise. New favorable insights, understanding and frames can be arrived at and provide direct means to manage the thoughts and the troubling circumstances (the actual life situations). A better understanding of whatever is troubling one can emerge from the act of being attentive to the working of mind and to the feelings of the body. Often difficulties in regard to a particular concern arise due to lack of solid frame to that concern. In his book Gendlin (1978) promotes a concept called

focusing. He maintains that the body always know the right solution for a given problem but it's the clinging to the cognitive self (the thoughts, logic and intellectualization) that hinders solving and relieving of the difficult feelings. He encourages, as a means of therapy, to focus on the inside, on the body and be attentive mindfully to it. His term of focusing might easily be mixed with self-focusing which sometimes can be of negative and ruminative nature. A distinction between the two becomes clearer upon considering his ideas. This point of the possible role of mindfulness in "restructuring" troubling thoughts is similar to some mechanisms proposed for the effectiveness of cognitive therapy in preventing relapse. Cognitive therapy works by training patients to reappraise and have "second thoughts" in relation to depressive thoughts and feelings (Barber & DeRubeis, 1989). Metacognitive awareness is a related concept here and would be discussed later. To sum, new insights have the potential of relieving sad feelings.

As said before two ways of helping relapse, by way of ruminative thought, are proposed. The first one, which has been already presented, concerns the direction of the mind away from rumination as the individual engages in mindfulness meditation. The second one concerns the gains over the longer term as the participant engages regularly in mindfulness training. The brain is highly flexible and it shows learning effects across a wide range of domains (Spolidoro et al., 2009). Mindfulness programs usually take the length of 8 weeks and results from current studies show that relapse rates get reduced. At the same time qualitative studies indicate that individuals report, as a function of continued training, better concentration ability, more relaxed attitude of mind, better sleep and wellbeing (Finucane & Mercer, 2006; Mason & Hargreaves, 2001). Clearly any training and new learning involves changes and adaptations of the biological system, and there is evidence for the positive effects of mindfulness training on brain activity. In one study by Jha et al. (2007) attentional cognitive systems (as presented of alerting, orienting and conflict monitoring indexed by the

Attention Network Test by Fan et al. 2002) were studied in persons naïve to mindfulness who were subjected to 8 week MBSR (Mindfulness-based stress reduction) program, in experienced individuals in concentrative meditation techniques and in a control group not receiving any mindfulness training. The results of this study indicate that for persons, who were initially naïve to mindfulness, improvement occurred in the orienting component of attention. The authors maintain based on the nature of the test used, that this essentially means that these participants improved in the “engage” component of attention. The cause for this, according to them, is due to the repeated training in engaging, shifting and disengaging of attention during mindfulness training. As said earlier mindfulness training involves paying attention to breath and bringing attention back to it upon wandering of the mind. In this same study, it has been shown that individuals who have practiced mindfulness for long time previously show better conflict monitoring ability that’s to say better top-down regulation of attentional selection. It remains speculative but this last finding might relate directly to the ability of managing and controlling undesired thoughts and habitual cognitive biases in response to life adversities for individuals previously prone to depression or and anxieties. In another study by Davidson et al. (2003) the brain electrical activity was measured for people who engaged in a 8-week mindfulness program and for people in a wait-list group. The study was a randomized controlled trial. The subjects were healthy individuals randomized from an employment setting. The results of the study showed, as a function of participation in the mindfulness program, an increase in brain electrical activity in left-anterior areas. Such pattern of activation, according to authors, was shown to be related in previous studies to positive affect. The participants in the mindfulness training showed also, compared to the wait-list group, better immune functioning. These results give insight in the biological correlations and adaptations as a function of engaging in regular mindfulness training. Such adaptation may have importance for the relapse prevention effect of MBCT programs.

In a follow up set of studies by Teasdale et al. (2002) to the first study by Teasdale et al. (2000) metacognitive awareness was introduced and studied as factor mediating the effects of cognitive therapy and MBCT. Metacognitive awareness refers to the way mental events are experienced as they arise. Having high levels of metacognitive awareness involves seeing thoughts as thoughts, and not facts. The experience of these thoughts involves the ones that unfold in the present moment (with little generation of more troubling thoughts by rumination). The studies showed that individuals with higher vulnerability to future relapse due to past depressions show lower levels of metacognitive awareness than controls (assessed by a specific measure of metacognitive awareness). The studies indicated also that cognitive therapy, even as it focuses on changing thoughts, changes also the way patients relate to thoughts and feelings. Thus metacognitive awareness can be thought of as mediating the effect of cognitive therapy and possibly MBCT on relapse rates. One study described in this paper of Teasdale et al. (2002) showed also that cognitive therapy changed the way depressive events were encoded rather than only influencing the way they are remembered. Experiences get processed differently as a function of cognitive therapy and the same might apply to MBCT. The increase in mindful awareness (higher cognitive awareness) was shown in a study by Michalak et al. (2008). Mindful awareness was assessed by Measure of Awareness and Coping in Autobiographical Memory (MACAM): developed by Moore et al. (1996). This is consistent with the findings from the study by Williams et al. (2000) on autobiographical memory, discussed earlier, that mindfulness training reduces the over general nature of autobiographical memories.

Depression feelings get better as a function of full or even partial improvement in residual symptoms, such as sleep problems. As said earlier qualitative studies indicate that the MBCT program had good effect on concentration ability and on sleep problems. Symptoms concerning circadian rhythms can be caused by stressful life events. Depression might result

if such symptoms continue and relief from depression occurs upon improvement in them (Healy, 1987).

Rumination has been discussed earlier but a relevant phenomenon is also worth mentioning. Worry is a form mental activity that is concerned about possible future outcomes as opposed to rumination which involves mainly past events. Repetitive thought is a common factor for the two and it has been proposed that it explains the common variance between rumination and worry (Segerstrom et al., 2000). Worry is related to aversive happenings. The worrier is concerned about a future aversive happening and he/she engages in verbal analysis concerning that possibility. This analysis might provide him/her with a sense of safety, yet in the long run worry and repetitive thought becomes exhausting and makes mood worse. The image of threat or of bad future happening is aversive, and this motivates the individual (with cognitive vulnerability) to engage in worrying. It has been proposed by some that mindfulness and other therapies that stress acceptance work by removing the motivational condition for worry (Hayes, 2002). As acceptance is cultivated it becomes easier to distinguish between times when control and manipulation is effective and when it is not. At the same time it makes the individual more aware of the conditioned responses to uncontrolled or past events. The private experiences become not so terrifying, alternative cognitions get generated and the need to engage in rumination and worry get decreased. And in this manner negative effects are reduced and positive effect is increased. Hayes (2002) talks also about the illusion of language by which the individual as he/she engages in worry or rumination becomes aware only of the products of thoughts: the thoughts themselves and not the rules (pathways) of arriving at those thoughts. Mindfulness and acceptance trains the individual in detecting what has been termed “literal self-rules” (similar to cognitive defusion) or the processes by which external and internal stimuli get encoded in thoughts as an ongoing and unfolding process. Having the illusion of language means that the individual is dealing with the world by way of

thought; he/she is structuring it by thought. By training in acceptance and mindfulness, adaptively changing focus becomes more efficient possibly, as indicated by a neuropsychological study of experienced meditators (Jha et al., 2007). A troubling thought or anticipation related to the future becomes less threatening (after exposure to it under mindfulness training) and thus processing of it (as it's encountered at a later point in time) becomes more fluent and less "troubling". This illuminates the nature of mindfulness as involving exposure to difficult feelings and thoughts as contrasted to avoidance in the case of ruminating and worrying. The authors contrast cognitive therapy and acceptance therapies (such as mindfulness) in that the former tries to change the content of thoughts (replacing them by adaptive ones) whereas the latter involves encouraging an accepting, non judgmental attitude to whatever cognitive content that might arise in mind. As noted earlier, both arrive at the same goal of improving mood and preventing relapse to depression. The effect of limiting the power of "literal self-rules" is similar to the idea of cognitive defusion from acceptance and commitment therapy (Hayes et al., 1999). Hayes (2002) proposes that acceptance based therapies build trust in the individual to rely on spontaneous thoughts and intuition rather than subjecting them to continuous verbal analysis. Essentially, self-rules get weakened and make place for more flexible and "contingency-shaped" behavioral tendencies.

The role of distraction in alleviating negative mood has been discussed early. One manner to understand mindfulness treatment is that it provides the individual an opportunity for distraction from troubling thoughts. However, this is not quite true since the individual is likely to encounter the troubling thoughts as he/she engages in mindfulness. Some have suggested that the role mindfulness plays is to provide the individual with a competing mode of being (that competes with worry, rumination and any sort of internal mental activity aimed at diminishing, avoiding or escaping internal experience) (Craske & Hazlett-Stevens, 2002). This issue has been discussed in relation to Generalized Anxiety Disorder. As it's well known

depression and anxiety go often hand in hand, and as said earlier relieving symptoms related to depression, such as worry and sleep problems is ought to help depression too. Studies are found that show that meditation in general reduces anxiety levels and that it increases affect (Carrington, 1993).

Another point that has been touched earlier is the fact that training in mindfulness increases the chances of the individual to respond more adaptively to life events (Borkovec et al., 1999). Responding in more adaptive ways leads likely to less adverse outcomes and thus reduces negative feelings toward those potential happenings. Consider what has been said earlier in relation to this in the model of self-regulation processes (Pyszczynski & Greenberg, 1992). Optimal self-regulation (that doesn't involve much rumination) increases the chances that the individual will take proper action and obtain favorable results.

Some regard depression as a deficit in compassion toward the self and others and that mindfulness training cultivates compassion (Allen & Knight, 2005). Clearly the qualities of accepting and non-judging features of mindfulness training would enhance compassionate feelings toward the self. Thoughts, including bad ones, are just reflections that get importance depending on the amount of attention they are given. Increasing feelings of compassion towards the self would involve more and often positive feelings about the self. This leads naturally to positive feelings towards others and this would enhance the quality of interpersonal interactions and relationships. All of this would have a positive effect as it would prevent depression due to the warm feelings towards the self and support from others.

The quality of being present to current ongoing moment that mindfulness encourages has tremendous positive effect. Being present involves fluent processing and is filled up with beams of energies (Csikszentmihalyi, 1990), a quality that repetitive thinking concerning the future and past lacks. Replacing old moments of ruminating and worrying with mindful energetic moments strengthens positive attitude and view of the self. The individual would be

guarded against expensing energies on dealing with depressive thoughts and feelings (the depression about depression circle, discussed earlier, gets broken).

The above mentioned mechanisms are the ways mindfulness is thought to prevent relapse to depression by. The observation that mindfulness training was successful at preventing relapse for individuals with 3 or more previous depressive episodes but not for those with 2 or less requires further investigation in future research. It can be speculated that individuals with several previous depressive episodes are more motivated to implement the mindfulness training and thus it works better for them. As hypothesized by Segal et al. (1996) it can be that with repeated depressive episodes less environmental stress is required in order to reactivate depressive cognitive styles. Mindfulness training works possibly by providing a buffer that compensates against this higher sensitivity to experience depression. The fact that people with 2 or less episodes have not benefited much from MBCT might be due to the fact that they have not yet experienced many episodes to make them extra vulnerable. Because of this they don't show the benefit that individuals with 3 or more episodes show. This however contradicts the results of the analysis conducted by Ma and Teasdale (2004) as it has been shown that for the individuals with 2 or less previous depressive episodes, and who didn't show benefit from the MBCT, it was their reactions to stressful life events that caused subsequent relapse. Their analysis showed, as mentioned earlier, that this group experienced more major life events than the group of 3 or more previous depressive episodes. No secure conclusions can be drawn from this pattern of results. Can it be that for some or other reason the sample of individuals with 2 or less previous depressive episodes got disproportionately more major stressful life events than the group with 3 or more previous depressive episodes, and this is the reason for the apparent lack of effect of MBCT for this group. It is likely that future qualitative studies would shade more light on this issue. Especially if such studies will

involve interviews with the participants and gathering of information about their mindfulness experiences and their ongoing life events.

The last point calls for future qualitative studies on MBCT that compare individuals with various numbers of previous depressive episodes. More studies of the quantitative, randomized and controlled studies are needed in order to compare MBCT with group based therapies. This arises from results from current qualitative studies where participants reported much benefit from joining a group of individuals facing same types of difficulties. Studies are needed that would distinguish the relative contribution of the mindfulness component and the group one. Follow up period of one year, as adopted by the studies presented in this thesis, is appropriate. It would be unlikely that any sort of treatment would be immune to major life events that might occur with the passage of time and thus longer follow up periods than one year are unjustified. It is also favorable that future studies on mindfulness get conducted by other researchers (than those behind the studies presented in this thesis) and at other centers.

2.4 Conclusion question 2: How might MBCT work?

To sum up, MBCT seems to work partly by breaking the vicious circle of depression about depression, and by giving the individual a way of coping with ruminative tendencies and by training up the attentional system to be better capable of managing negative thoughts (as a function of continued regular mindfulness training). Mindfulness training gives the individual also a feeling of mastery and control over their negative thoughts and feelings. Reducing ruminative thinking promotes mental health and fitness in general in such a way that the individual will be more likely to take appropriate and favorable action decisions. Taking such decision would prevent unneeded negative feelings as a consequence of unfortunate actions.

General conclusions

The first question of this thesis was whether MBCT actually works to prevent relapse from depression. There are at present some studies indicating that this might be true. However, as this research is in the beginning stages, we only have indications. Studies comparing MBCT with other therapies of proven effect can indicate if MBCT works as well, or better, than those. Also, we lack knowledge of when this therapy works better than other therapies, and for whom.

The second question of this thesis was how MBCT might work. I have suggested that MBCT might work in some of the same manners as Cognitive therapy, and somewhat differently. It might help by passing and preventing ruminative tendencies through a directing of attention to less threatening objects, rather than having attention dealing with the content of ruminative thoughts. It remains to be seen what dismantling studies might tell us more about the specific mechanisms of MBCT.

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